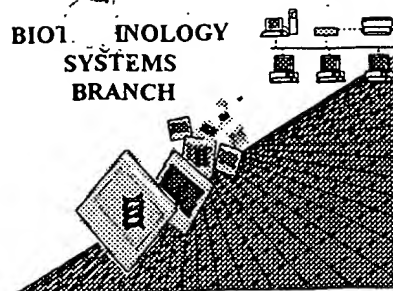


RAW SEQUENCE LISTING **ERROR REPORT**



The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 09/879,257

Source: OIPE

Date Processed by STIC: 6-28-01

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.

PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,**
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY**

FOR CRF SUBMISSION QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.

FOR SEQUENCE RULES INTERPRETATION, PLEASE CONTACT ROBERT WAX, 703-308-4216.

PATENTIN 2.1 e-mail help: patin21help@uspto.gov or phone 703-306-4119 (R. Wax)

PATENTIN 3.0 e-mail help: patin3help@uspto.gov or phone 703-306-4119 (R. Wax)

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 3.0 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW:

Checker Version 3.0

The Checker Version 3.0 application is a state-of-the-art Windows based software program employing a logical and intuitive user-interface to check whether a sequence listing is in compliance with format and content rules. Checker Version 3.0 works for sequence listings generated for the original version of 37 CFR §§1.821 – 1.825 effective October 1, 1990 (old rules) and the revised version (new rules) effective July 1, 1998 as well as World Intellectual Property Organization (WIPO) Standard ST.25.

Checker Version 3.0 replaces the previous DOS-based version of Checker, and is Y2K-compliant. Checker allows public users to check sequence listings in Computer Readable form (CRF) before submitting them to the United States Patent and Trademark Office (USPTO). Use of Checker prior to filing the sequence listing is expected to result in fewer errored sequence listings, thus saving time and money.

Checker Version 3.0 can be down loaded from the USPTO website at the following address:

<http://www.uspto.gov/web/offices/pac/checker>

Raw Sequence Listing Error Summary

ERROR DETECTED SUGGESTED CORRECTION

SERIAL NUMBER: 09/879,257

ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE

- 1 ☐ Wrapped Nucleics
 Wrapped Aminos The number/text at the end of each line "wrapped" down to the next line. This may occur if your file was retrieved in a word processor after creating it. Please adjust your right margin to .3; this will prevent "wrapping."
- 2 ☐ Invalid Line Length The rules require that a line not exceed 72 characters in length. This includes white spaces.
- 3 ☒ Misaligned Amino
 Numbering The numbering under each 5th amino acid is misaligned. Do not use tab codes between numbers; use space characters, instead.
- 4 ☐ Non-ASCII The submitted file was not saved in ASCII(DOS) text, as required by the Sequence Rules. Please ensure your subsequent submission is saved in ASCII text.
- 5 ☐ Variable Length Sequence(s) _____ contain n's or Xaa's representing more than one residue. Per Sequence Rules, each n or Xaa can only represent a single residue. Please present the maximum number of each residue having variable length and indicate in the <220>-<223> section that some may be missing.
- 6 ☐ PatentIn 2.0
 "bug" A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequences(s) _____. Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. This applies to the mandatory <220>-<223> sections for Artificial or Unknown sequences.
- 7 ☐ Skipped Sequences
 (OLD RULES) Sequence(s) _____ missing. If intentional, please insert the following lines for each skipped sequence:
 (2) INFORMATION FOR SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)
 (i) SEQUENCE CHARACTERISTICS: (Do not insert any subheadings under this heading)
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)
 This sequence is intentionally skipped

 Please also adjust the "(ii) NUMBER OF SEQUENCES:" response to include the skipped sequences.
- 8 ☐ Skipped Sequences
 (NEW RULES) Sequence(s) _____ missing. If intentional, please insert the following lines for each skipped sequence.
 <210> sequence id number
 <400> sequence id number
 000
- 9 ☐ Use of n's or Xaa's
 (NEW RULES) Use of n's and/or Xaa's have been detected in the Sequence Listing.
 Per 1.823 of Sequence Rules, use of <220>-<223> is MANDATORY if n's or Xaa's are present.
 In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.
- 10 ☐ Invalid <213>
 Response Per 1.823 of Sequence Rules, the only valid <213> responses are: Unknown, Artificial Sequence, or scientific name (Genus/species). <220>-<223> section is required when <213> response is Unknown or is Artificial Sequence
- 11 ☐ Use of <220> Sequence(s) _____ missing the <220> "Feature" and associated numeric identifiers and responses.
 Use of <220> to <223> is MANDATORY if <213> "Organism" response is "Artificial Sequence" or "Unknown." Please explain source of genetic material in <220> to <223> section.
 (See "Federal Register," 06/01/1998, Vol. 63, No. 104, pp. 29631-32) (Sec. 1.823 of Sequence Rules)
- 12 ☐ PatentIn 2.0
 "bug" Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing). Instead, please use "File Manager" or any other manual means to copy file to floppy disk.

OIKE

RAW SEQUENCE LISTING

DATE: 06/28/2001

PATENT APPLICATION: US/09/879,257

TIME: 14:46:42

Input Set : A:\PTO.txt

Output Set: N:\CRF3\06282001\I879257.raw

3 <110> APPLICANT: WAKO PURE CHEMICAL INDUSTRIES, LTD.
 5 <120> TITLE OF INVENTION: Hybrid Enzymes and Use Thereof
 7 <130> FILE REFERENCE: WJ018
 C--> 9 <140> CURRENT APPLICATION NUMBER: US/09/879,257
 C--> 10 <141> CURRENT FILING DATE: 2001-06-12
 12 <160> NUMBER OF SEQ ID NOS: 56
 14 <170> SOFTWARE: PatentIn Ver. 2.1

Does Not Comply
 Corrected Diskette Needed
 See pp. 1-9

ERRORED SEQUENCES

16 <210> SEQ ID NO: 1
 17 <211> LENGTH: 206
 18 <212> TYPE: PRT
 19 <213> ORGANISM: Human
 21 <400> SEQUENCE: 1
 22 Gln Thr Asp Met Ser Arg Lys Ala Phe Val Phe Pro Lys Glu Ser Asp
 E--> 23 1 5 10 15
 25 Thr Ser Tyr Val Ser Leu Lys Ala Pro Leu Thr Lys Pro Leu Lys Ala
 E--> 26 20 25 30
 28 Phe Thr Val Cys Leu His Phe Tyr Thr Glu Leu Ser Ser Thr Arg Gly
 E--> 29 35 40 45
 31 Tyr Ser Ile Phe Ser Tyr Ala Thr Lys Arg Gln Asp Asn Glu Ile Leu
 E--> 32 50 55 60
 34 Ile Phe Trp Ser Lys Asp Ile Gly Tyr Ser Phe Thr Val Gly Gly Ser
 E--> 35 65 70 75 80
 37 Glu Ile Leu Phe Glu Val Pro Glu Val Thr Val Ala Pro Val His Ile
 E--> 38 85 90 95
 40 Cys Thr Ser Trp Glu Ser Ala Ser Gly Ile Val Glu Phe Trp Val Asp
 E--> 41 100 105 110
 43 Gly Lys Pro Arg Val Arg Lys Ser Leu Lys Lys Gly Tyr Thr Val Gly
 E--> 44 115 120 125
 46 Ala Glu Ala Ser Ile Ile Leu Gly Gln Glu Gln Asp Ser Phe Gly Gly
 E--> 47 130 135 140
 49 Asn Phe Glu Gly Ser Gln Ser Leu Val Gly Asp Ile Gly Asn Val Asn
 E--> 50 145 150 155 160
 52 Met Trp Asp Phe Val Leu Ser Pro Asp Glu Ile Asn Thr Ile Tyr Leu
 E--> 53 165 170 175
 55 Gly Gly Pro Phe Ser Pro Asn Val Leu Asn Trp Arg Ala Leu Lys Tyr
 E--> 56 180 185 190
 58 Glu Val Gln Gly Glu Val Phe Thr Lys Pro Gln Leu Trp Pro
 E--> 59 195 200 205
 62 <210> SEQ ID NO: 2
 63 <211> LENGTH: 16
 64 <212> TYPE: PRT
 65 <213> ORGANISM: Human
 67 <400> SEQUENCE: 2

Misaligned amino
 acid numbering.
 Use spaces,
 not tabs.
 See # 3 on
 the Error
 Summary Sheet.

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/879,257

DATE: 06/28/2001

TIME: 14:46:42

Input Set : A:\PTO.txt

Output Set: N:\CRF3\06282001\I879257.raw

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68 Asp Met Ser Arg Lys Ala Phe Val Phe Pro Lys Glu Ser Asp Thr Ser
E--> 69 1 5 10 15
72 <210> SEQ ID NO: 3
73 <211> LENGTH: 27
74 <212> TYPE: PRT
75 <213> ORGANISM: Human
77 <400> SEQUENCE: 3
78 Leu Val Gly Asp Ile Gly Asn Val Asn Met Trp Asp Phe Val Leu Ser
E--> 79 1 5 10 15
81 Pro Asp Glu Ile Asn Thr Ile Tyr Leu Gly Gly
E--> 82 20 25
85 <210> SEQ ID NO: 4
86 <211> LENGTH: 12
87 <212> TYPE: PRT
88 <213> ORGANISM: Human
90 <400> SEQUENCE: 4
91 Leu Lys Lys Gly Tyr Thr Val Gly Ala Glu Ala Ser
E--> 92 1 5 10
95 <210> SEQ ID NO: 5
96 <211> LENGTH: 10
97 <212> TYPE: PRT
98 <213> ORGANISM: Human
100 <400> SEQUENCE: 5
101 Arg Ala Leu Lys Tyr Glu Val Gln Gly Glu
E--> 102 1 5 10
105 <210> SEQ ID NO: 6
106 <211> LENGTH: 486
107 <212> TYPE: PRT
108 <213> ORGANISM: Leuconostoc mesenteroides
110 <400> SEQUENCE: 6
111 Met Val Ser Glu Ile Lys Thr Leu Val Thr Phe Phe Gly Gly Thr Gly
E--> 112 1 5 10 15
114 Asp Leu Ala Lys Arg Lys Leu Tyr Pro Ser Val Phe Asn Leu Tyr Lys
E--> 115 20 25 30
117 Lys Gly Tyr Leu Gln Lys His Phe Ala Ile Val Gly Thr Ala Arg Gln
E--> 118 35 40 45
120 Ala Leu Asn Asp Asp Glu Phe Lys Gln Leu Val Arg Asp Ser Ile Lys
E--> 121 50 55 60
123 Asp Phe Thr Asp Asp Gln Ala Gln Ala Glu Ala Phe Ile Glu His Phe
E--> 124 65 70 75 80
126 Ser Tyr Arg Ala His Asp Val Thr Asp Ala Ala Ser Tyr Ala Val Leu
E--> 127 85 90 95
129 Lys Glu Ala Ile Glu Glu Ala Ala Asp Lys Phe Asp Ile Asp Gly Asn
E--> 130 100 105 110
132 Arg Ile Phe Tyr Met Ser Val Ala Pro Arg Phe Phe Gly Thr Ile Ala
E--> 133 115 120 125
135 Lys Tyr Leu Lys Ser Glu Gly Leu Leu Ala Asp Thr Gly Tyr Asn Arg
E--> 136 130 135 140
138 Leu Met Ile Glu Lys Pro Phe Gly Thr Ser Tyr Asp Thr Ala Ala Glu

```

*misaligned
amino acid
numbering.*

Same

RAW SEQUENCE LISTING

DATE: 06/28/2001

PATENT APPLICATION: US/09/879,257

TIME: 14:46:42

Input Set : A:\PTO.txt

Output Set: N:\CRF3\06282001\I879257.raw

```

E--> 139 145      150      155      160
      141 Leu Gln Asn Asp Leu Glu Asn Ala Phe Asp Asp Asn Gln Leu Phe Arg
E--> 142      165      170      175
      144 Ile Asp His Tyr Leu Gly Lys Glu Met Val Gln Asn Ile Ala Ala Leu
E--> 145      180      185      190
      147 Arg Phe Gly Asn Pro Ile Phe Asp Ala Ala Trp Asn Lys Asp Tyr Ile
E--> 148      195      200      205
      150 Lys Asn Val Gln Val Thr Leu Ser Glu Val Leu Gly Val Glu Glu Arg
E--> 151      210      215      220
      153 Ala Gly Tyr Tyr Asp Thr Ala Gly Ala Leu Leu Asp Met Ile Gln Asn
E--> 154 225      230      235      240
      156 His Thr Met Gln Ile Val Gly Trp Leu Ala Met Glu Lys Pro Glu Ser
E--> 157      245      250      255
      159 Phe Thr Asp Lys Asp Ile Arg Ala Ala Lys Asn Ala Ala Phe Asn Ala
E--> 160      260      265      270
      162 Leu Lys Ile Tyr Asp Glu Ala Glu Val Asn Lys Tyr Phe Val Arg Ala
E--> 163      275      280      285
      165 Gln Tyr Gly Ala Gly Asp Ser Ala Asp Phe Lys Pro Tyr Leu Glu Glu
E--> 166      290      295      300
      168 Leu Asp Val Pro Ala Asp Ser Lys Asn Asn Thr Phe Ile Ala Gly Glu
E--> 169 305      310      315      320
      171 Leu Gln Phe Asp Leu Pro Arg Trp Glu Gly Val Pro Phe Tyr Val Arg
E--> 172      325      330      335
      174 Ser Gly Lys Arg Leu Ala Ala Lys Gln Thr Arg Val Asp Ile Val Phe
E--> 175      340      345      350
      177 Lys Ala Gly Thr Phe Asn Phe Gly Ser Glu Gln Glu Ala Gln Glu Ala
E--> 178      355      360      365
      180 Val Leu Ser Ile Ile Ile Asp Pro Lys Gly Ala Ile Glu Leu Lys Leu
E--> 181      370      375      380
      183 Asn Ala Lys Ser Val Glu Asp Ala Phe Asn Thr Arg Thr Ile Asp Leu
E--> 184 385      390      395      400
      186 Gly Trp Thr Val Ser Asp Glu Asp Lys Lys Asn Thr Pro Glu Pro Tyr
E--> 187      405      410      415
      189 Glu Arg Met Ile His Asp Thr Met Asn Gly Asp Gly Ser Asn Phe Ala
E--> 190      420      425      430
      192 Asp Trp Asn Gly Val Ser Ile Ala Trp Lys Phe Val Asp Ala Ile Ser
E--> 193      435      440      445
      195 Ala Val Tyr Thr Ala Asp Lys Ala Pro Leu Glu Thr Tyr Lys Ser Gly
E--> 196      450      455      460
      198 Ser Met Gly Pro Glu Ala Ser Asp Lys Leu Leu Ala Ala Asn Gly Asp
E--> 199 465      470      475      480
      201 Ala Trp Val Phe Lys Gly
E--> 202      485
      490 <210> SEQ ID NO: 30
      491 <211> LENGTH: 1024
      492 <212> TYPE: PRT
      493 <213> ORGANISM: Escherichia coli
      495 <400> SEQUENCE: 30
      496 Met Thr Met Ile Thr Asp Ser Leu Ala Val Val Leu Gln Arg Arg Asp

```

Same

RAW SEQUENCE LISTING

DATE: 06/28/2001

PATENT APPLICATION: US/09/879,257

TIME: 14:46:42

Input Set : A:\PTO.txt

Output Set: N:\CRF3\06282001\I879257.raw

```

E--> 497 1 5 10 15
      499 Trp Glu Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala His Pro
E--> 500 20 25 30
      502 Pro Phe Ala Ser Trp Arg Asn Ser Glu Glu Ala Arg Thr Asp Arg Pro
E--> 503 35 40 45
      505 Ser Gln Gln Leu Arg Ser Leu Asn Gly Glu Trp Arg Phe Ala Trp Phe
E--> 506 50 55 60
      508 Pro Ala Pro Glu Ala Val Pro Glu Ser Trp Leu Glu Cys Asp Leu Pro
E--> 509 65 70 75 80
      511 Glu Ala Asp Thr Val Val Val Pro Ser Asn Trp Gln Met His Gly Tyr
E--> 512 85 90 95
      514 Asp Ala Pro Ile Tyr Thr Asn Val Thr Tyr Pro Ile Thr Val Asn Pro
E--> 515 100 105 110
      517 Pro Phe Val Pro Thr Glu Asn Pro Thr Gly Cys Tyr Ser Leu Thr Phe
E--> 518 115 120 125
      520 Asn Val Asp Glu Ser Trp Leu Gln Glu Gly Gln Thr Arg Ile Ile Phe
E--> 521 130 135 140
      523 Asp Gly Val Asn Ser Ala Phe His Leu Trp Cys Asn Gly Arg Trp Val
E--> 524 145 150 155 160
      526 Gly Tyr Gly Gln Asp Ser Arg Leu Pro Ser Glu Phe Asp Leu Ser Ala
E--> 527 165 170 175
      529 Phe Leu Arg Ala Gly Glu Asn Arg Leu Ala Val Met Val Leu Arg Trp
E--> 530 180 185 190
      532 Ser Asp Gly Ser Tyr Leu Glu Asp Gln Asp Met Trp Arg Met Ser Gly
E--> 533 195 200 205
      535 Ile Phe Arg Asp Val Ser Leu Leu His Lys Pro Thr Thr Gln Ile Ser
E--> 536 210 215 220
      538 Asp Phe His Val Ala Thr Arg Phe Asn Asp Asp Phe Ser Arg Ala Val
E--> 539 225 230 235 240
      541 Leu Glu Ala Glu Val Gln Met Cys Gly Glu Leu Arg Asp Tyr Leu Arg
E--> 542 245 250 255
      544 Val Thr Val Ser Leu Trp Gln Gly Glu Thr Gln Val Ala Ser Gly Thr
E--> 545 260 265 270
      547 Ala Pro Phe Gly Gly Glu Ile Ile Asp Glu Arg Gly Gly Tyr Ala Asp
E--> 548 275 280 285
      550 Arg Val Thr Leu Arg Leu Asn Val Glu Asn Pro Lys Leu Trp Ser Ala
E--> 551 290 295 300
      553 Glu Ile Pro Asn Leu Tyr Arg Ala Val Val Glu Leu His Thr Ala Asp
E--> 554 305 310 315 320
      556 Gly Thr Leu Ile Glu Ala Glu Ala Cys Asp Val Gly Phe Arg Glu Val
E--> 557 325 330 335
      559 Arg Ile Glu Asn Gly Leu Leu Leu Leu Asn Gly Lys Pro Leu Leu Ile
E--> 560 340 345 350
      562 Arg Gly Val Asn Arg His Glu His His Pro Leu His Gly Gln Val Met
E--> 563 355 360 365
      565 Asp Glu Gln Thr Met Val Gln Asp Ile Leu Leu Met Lys Gln Asn Asn
E--> 566 370 375 380
      568 Phe Asn Ala Val Arg Cys Ser His Tyr Pro Asn His Pro Leu Trp Tyr
E--> 569 385 390 395 400

```

Same

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/879,257

DATE: 06/28/2001
 TIME: 14:46:42

Input Set : A:\PTO.txt
 Output Set: N:\CRF3\06282001\I879257.raw

```

571 Thr Leu Cys Asp Arg Tyr Gly Leu Tyr Val Val Asp Glu Ala Asn Ile
E--> 572      405      410      415
574 Glu Thr His Gly Met Val Pro Met Asn Arg Leu Thr Asp Asp Pro Arg
E--> 575      420      425      430
577 Trp Leu Pro Ala Met Ser Glu Arg Val Thr Arg Met Val Gln Arg Asp
E--> 578      435      440      445
580 Arg Asn His Pro Ser Val Ile Ile Trp Ser Leu Gly Asn Glu Ser Gly
E--> 581      450      455      460
583 His Gly Ala Asn His Asp Ala Leu Tyr Arg Trp Ile Lys Ser Val Asp
E--> 584 465      470      475      480
586 Pro Ser Arg Pro Val Gln Tyr Glu Gly Gly Gly Ala Asp Thr Thr Ala
E--> 587      485      490      495
589 Thr Asp Ile Ile Cys Pro Met Tyr Ala Arg Val Asp Glu Asp Gln Pro
E--> 590      500      505      510
592 Phe Pro Ala Val Pro Lys Trp Ser Ile Lys Lys Trp Leu Ser Leu Pro
E--> 593      515      520      525
595 Gly Glu Thr Arg Pro Leu Ile Leu Cys Glu Tyr Ala His Ala Met Gly
E--> 596 530      535      540
598 Asn Ser Leu Gly Gly Phe Ala Lys Tyr Trp Gln Ala Phe Arg Gln Tyr
E--> 599 545      550      555      560
601 Pro Arg Leu Gln Gly Gly Phe Val Trp Asp Trp Val Asp Gln Ser Leu
E--> 602      565      570      575
604 Ile Lys Tyr Asp Glu Asn Gly Asn Pro Trp Ser Ala Tyr Gly Gly Asp
E--> 605      580      585      590
607 Phe Gly Asp Thr Pro Asn Asp Arg Gln Phe Cys Met Asn Gly Leu Val
E--> 608      595      600      605
610 Phe Ala Asp Arg Thr Pro His Pro Ala Leu Thr Glu Ala Lys His Gln
E--> 611 610      615      620
613 Gln Gln Phe Phe Gln Phe Arg Leu Ser Gly Gln Thr Ile Glu Val Thr
E--> 614 625      630      635      640
616 Ser Glu Tyr Leu Phe Arg His Ser Asp Asn Glu Leu Leu His Trp Met
E--> 617      645      650      655
619 Val Ala Leu Asp Gly Lys Pro Leu Ala Ser Gly Glu Val Pro Leu Asp
E--> 620      660      665      670
622 Val Ala Pro Gln Gly Lys Gln Leu Ile Glu Leu Pro Glu Leu Pro Gln
E--> 623      675      680      685
625 Pro Glu Ser Ala Gly Gln Leu Trp Leu Thr Val Arg Val Val Gln Pro
E--> 626 690      695      700
628 Asn Ala Thr Ala Trp Ser Glu Ala Gly His Ile Ser Ala Trp Gln Gln
E--> 629 705      710      715      720
631 Trp Arg Leu Ala Glu Asn Leu Ser Val Thr Leu Pro Ala Ala Ser His
E--> 632      725      730      735
634 Ala Ile Pro His Leu Thr Thr Ser Glu Met Asp Phe Cys Ile Glu Leu
E--> 635      740      745      750
637 Gly Asn Lys Arg Trp Gln Phe Asn Arg Gln Ser Gly Phe Leu Ser Gln
E--> 638      755      760      765
640 Met Trp Ile Gly Asp Lys Lys Gln Leu Leu Thr Pro Leu Arg Asp Gln
E--> 641 770      775      780
643 Phe Thr Arg Ala Pro Leu Asp Asn Asp Ile Gly Val Ser Glu Ala Thr

```

Same

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/879,257

DATE: 06/28/2001

TIME: 14:46:42

Input Set : A:\PTO.txt

Output Set: N:\CRF3\06282001\I879257.raw

```

E--> 644 785      790      795      800
      646 Arg Ile Asp Pro Asn Ala Trp Val Glu Arg Trp Lys Ala Ala Gly His
E--> 647      805      810      815
      649 Tyr Gln Ala Glu Ala Ala Leu Leu Gln Cys Thr Ala Asp Thr Leu Ala
E--> 650      820      825      830
      652 Asp Ala Val Leu Ile Thr Thr Ala His Ala Trp Gln His Gln Gly Lys
E--> 653      835      840      845
      655 Thr Leu Phe Ile Ser Arg Lys Thr Tyr Arg Ile Asp Gly Ser Gly Gln
E--> 656      850      855      860
      658 Met Ala Ile Thr Val Asp Val Glu Val Ala Ser Asp Thr Pro His Pro
E--> 659 865      870      875      880
      661 Ala Arg Ile Gly Leu Asn Cys Gln Leu Ala Gln Val Ala Glu Arg Val
E--> 662      885      890      895
      664 Asn Trp Leu Gly Leu Gly Pro Gln Glu Asn Tyr Pro Asp Arg Leu Thr
E--> 665      900      905      910
      667 Ala Ala Cys Phe Asp Arg Trp Asp Leu Pro Leu Ser Asp Met Tyr Thr
E--> 668      915      920      925
      670 Pro Tyr Val Phe Pro Ser Glu Asn Gly Leu Arg Cys Gly Thr Arg Glu
E--> 671 930      935      940
      673 Leu Asn Tyr Gly Pro His Gln Trp Arg Gly Asp Phe Gln Phe Asn Ile
E--> 674 945      950      955      960
      676 Ser Arg Tyr Ser Gln Gln Gln Leu Met Glu Thr Ser His Arg His Leu
E--> 677      965      970      975
      679 Leu His Ala Glu Glu Gly Thr Trp Leu Asn Ile Asp Gly Phe His Met
E--> 680      980      985      990
      682 Gly Ile Gly Gly Asp Asp Ser Trp Ser Pro Ser Val Ser Ala Glu Phe
E--> 683      995      1000      1005
      685 Gln Leu Ser Ala Gly Arg Tyr His Tyr Gln Leu Val Trp Cys Gln Lys
E--> 686 1010      1015      1020
      692 <210> SEQ ID NO: 31
      693 <211> LENGTH: 448
      694 <212> TYPE: PRT
      695 <213> ORGANISM: Escherichia coli
      697 <400> SEQUENCE: 31
      698 Thr Pro Glu Met Pro Val Leu Glu Asn Arg Ala Ala Gln Gly Asp Ile
E--> 699 1      5      10      15
      701 Thr Ala Pro Gly Gly Ala Arg Arg Leu Thr Gly Asp Gln Thr Ala Ala
E--> 702      20      25      30
      704 Leu Arg Asp Ser Leu Ser Asp Lys Pro Ala Lys Asn Ile Ile Leu Leu
E--> 705      35      40      45
      707 Ile Gly Asp Gly Met Gly Asp Ser Glu Ile Thr Ala Ala Arg Asn Tyr
E--> 708      50      55      60
      710 Ala Glu Gly Ala Gly Gly Phe Phe Lys Gly Ile Asp Ala Leu Pro Leu
E--> 711 65      70      75      80
      713 Thr Gly Gln Tyr Thr His Tyr Ala Leu Asn Lys Lys Thr Gly Lys Pro
E--> 714      85      90      95
      716 Asp Tyr Val Thr Asp Ser Ala Ala Ser Ala Thr Ala Trp Ser Thr Gly
E--> 717      100      105      110
      719 Val Lys Thr Tyr Asn Gly Ala Leu Gly Val Asp Ile His Glu Lys Asp

```

Same

Same

RAW SEQUENCE LISTING

DATE: 06/28/2001

PATENT APPLICATION: US/09/879,257

TIME: 14:46:42

Input Set : A:\PTO.txt

Output Set: N:\CRF3\06282001\I879257.raw

```

E--> 720      115      120      125
      722 His Pro Thr Ile Leu Glu Met Ala Lys Ala Ala Gly Leu Ala Thr Gly
E--> 723      130      135      140
      725 Asn Val Ser Thr Ala Glu Leu Gln Asp Ala Thr Pro Ala Ala Leu Val
E--> 726 145      150      155      160
      728 Ala His Val Thr Ser Arg Lys Cys Tyr Gly Pro Ser Ala Thr Ser Glu
E--> 729      165      170      175
      731 Lys Cys Pro Gly Asn Ala Leu Glu Lys Gly Gly Lys Gly Ser Ile Thr
E--> 732      180      185      190
      734 Glu Gln Leu Leu Asn Ala Arg Ala Asp Val Thr Leu Gly Gly Gly Ala
E--> 735      195      200      205
      737 Lys Thr Phe Ala Glu Thr Ala Thr Ala Gly Glu Trp Gln Gly Lys Thr
E--> 738      210      215      220
      740 Leu Arg Glu Gln Ala Gln Ala Arg Gly Tyr Gln Leu Val Ser Asp Ala
E--> 741 225      230      235      240
      743 Ala Ser Leu Asn Ser Val Thr Glu Ala Asn Gln Gln Lys Pro Leu Leu
E--> 744      245      250      255
      746 Gly Leu Phe Ala Asp Gly Asn Met Pro Val Arg Trp Leu Gly Pro Lys
E--> 747      260      265      270
      749 Ala Thr Tyr His Gly Asn Ile Asp Lys Pro Ala Val Thr Cys Thr Pro
E--> 750      275      280      285
      752 Asn Pro Gln Arg Asn Asp Ser Val Pro Thr Leu Ala Gln Met Thr Asp
E--> 753      290      295      300
      755 Lys Ala Ile Glu Leu Leu Ser Lys Asn Glu Lys Gly Phe Phe Leu Gln
E--> 756 305      310      315      320
      758 Val Glu Gly Ala Ser Ile Asp Lys Gln Asp His Ala Ala Asn Pro Cys
E--> 759      325      330      335
      761 Gly Gln Ile Gly Glu Thr Val Asp Leu Asp Glu Ala Val Gln Arg Ala
E--> 762      340      345      350
      764 Leu Glu Phe Ala Lys Lys Glu Gly Asn Thr Leu Val Ile Val Thr Ala
E--> 765      355      360      365
      767 Asp His Ala His Ala Ser Gln Ile Val Ala Pro Asp Thr Lys Ala Pro
E--> 768      370      375      380
      770 Gly Leu Thr Gln Ala Leu Asn Thr Lys Asp Gly Ala Val Met Val Met
E--> 771 385      390      395      400
      773 Ser Tyr Gly Asn Ser Glu Glu Asp Ser Gln Glu His Thr Gly Gln Leu
E--> 774      405      410      415
      776 Arg Ile Ala Ala Tyr Gly Pro His Ala Ala Asn Val Val Gly Leu Thr
E--> 777      420      425      430
      779 Asp Gln Thr Asp Leu Phe Tyr Thr Met Lys Ala Ala Leu Gly Leu Lys
E--> 780      435      440      445
      945 <210> SEQ ID NO: 45
      946 <211> LENGTH: 55
      947 <212> TYPE: PRT
      948 <213> ORGANISM: Hepatitis B virus
      950 <400> SEQUENCE: 45
      951 Met Gln Trp Asn Ser Thr Ala Phe His Gln Ala Leu Gln Asp Pro Arg
E--> 952 1 5 10 15
      953 Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly Ser Ser Ser Gly Thr Val

```

Same

Same

RAW SEQUENCE LISTING

DATE: 06/28/2001

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TIME: 14:46:42

Input Set : A:\PTO.txt

Output Set: N:\CRF3\06282001\I879257.raw

E--> 954 20 25 30

955 Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg

E--> 956 35 40 45

957 Thr Gly Asp Pro Val Thr Asn

E--> 958 50 55

961 <210> SEQ ID NO: 46

962 <211> LENGTH: 12

963 <212> TYPE: PRT

964 <213> ORGANISM: Hepatitis B virus

966 <400> SEQUENCE: 46

967 Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly

E--> 968 1 5 10

996 <210> SEQ ID NO: 49

997 <211> LENGTH: 84

998 <212> TYPE: PRT

999 <213> ORGANISM: Human

1001 <400> SEQUENCE: 49

1002 Ala Val Ser Glu Ile Gln Phe Met His Asn Leu Gly Lys His Leu Ser

E--> 1003 1 5 10 15

1005 Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His

E--> 1006 20 25 30

1008 Asn Phe Val Ala Leu Gly Ala Ser Ile Ala Tyr Arg Asp Gly Ser Ser

E--> 1009 35 40 45

1011 Gln Arg Pro Arg Lys Lys Glu Asp Asn Val Leu Val Glu Ser His Gln

E--> 1012 50 55 60

1014 Lys Ser Leu Gly Glu Ala Asp Lys Ala Asp Val Asp Val Leu Ile Lys

E--> 1015 65 70 75 80

1017 Ala Lys Pro Gln

1020 <210> SEQ ID NO: 50

1021 <211> LENGTH: 15

1022 <212> TYPE: PRT

1023 <213> ORGANISM: Human

1025 <400> SEQUENCE: 50

1026 Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His Asn

E--> 1027 1 5 10 15

1067 <210> SEQ ID NO: 54

1068 <211> LENGTH: 26

1069 <212> TYPE: DNA

1070 <213> ORGANISM: Artificial Sequence

1072 <220> FEATURE:

1073 <223> OTHER INFORMATION: Description of Artificial Sequence: Oligonucleotide primer

1075 <400> SEQUENCE: 54

E--> 1076 ctgcccggtt attattattt ttgacaccag

26

Same

Same

Same

Same

→ number of bases differ:
 - 26 listed
 - 30 shown

09/879, 257

p. 9

<210> 25 *Seq. #25*

<211> 32

<212> DNA

<213> Artificial Sequence

<220> 

*Missing <223> feature explaining
artificial sequence*

<400> 25

ttggatccag caggtacgtc taattcttca ag

32

VERIFICATION SUMMARY

DATE: 06/28/2001

PATENT APPLICATION: US/09/879,257

TIME: 14:46:43

Input Set : A:\PTO.txt

Output Set: N:\CRF3\06282001\I879257.raw

L:9 M:270 C: Current Application Number differs, Replaced Application Number
L:10 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:23 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:1
M:332 Repeated in SeqNo=1
L:69 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:2
L:79 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:3
M:332 Repeated in SeqNo=3
L:92 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:4
L:102 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:5
L:112 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:6
M:332 Repeated in SeqNo=6
L:438 M:258 W: Mandatory Feature missing, <223> OTHER INFORMATION:
L:497 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:30
M:332 Repeated in SeqNo=30
L:699 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:31
M:332 Repeated in SeqNo=31
L:952 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:45
M:332 Repeated in SeqNo=45
L:968 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:46
L:1003 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:49
M:332 Repeated in SeqNo=49
L:1027 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:50
L:1076 M:254 E: No. of Bases conflict, LENGTH:Input:26 Counted:30 SEQ:54
L:1076 M:252 E: No. of Seq. differs, <211>LENGTH:Input:26 Found:30 SEQ:54